

Rhode Island Department of Transportation

Highway Lighting Management System

Plan



Rhode Island Department of Transportation
Operations Division
Two Capitol Hill
Providence, Rhode Island 02903

Rhode Island Department of Transportation

*Highway Lighting Management System
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Preface

The Rhode Island Department of Transportation, Operations Division is responsible for operation of the State Highway System. This system includes 1108 miles of State Highway, throughout Rhode Island's thirty-nine cities and towns. The Operations Division includes six functional areas: Construction, Final Review, Highway Maintenance, Materials, Survey and the Transportation Management Center.

The Highway Maintenance Division is responsible for maintaining lighting on the State Highway System. An inventory of highway lighting systems on state highways was prepared in May 2000. The location of highway lighting was presented, along with compilations of major components. A general condition was also provided for each lighting system. This inventory was used to develop this *Highway Lighting Management System Plan*. Projects necessary to upgrade highway lighting on state highways are presented in this Plan.

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Introduction

The Highway Maintenance Division maintains about 1100 miles of State Highway. Some major highways, where high speeds are allowed, have highway lighting to increase the safety of night travel. There are also some smaller facilities, mostly bridges and park & ride lots, that are lit. Highway lighting is provided in 26 of Rhode Island's 39 municipalities. Approximately 92 miles of state highway are lit. There are nearly 6900 lights, on about 5900 poles.

There are other state highways that have local streetlights. These lights are installed and maintained by utilities for local communities. The major purpose of this lighting is to light dark areas for the safety of surrounding neighborhoods and pedestrians. This lighting does not illuminate roadways to the standards necessary for high-speed travel. The Rhode Island Department of Transportation is not responsible for this street lighting. Lighting which is maintained, or paid for, by others is not included in this report.

Most lighting systems are owned and maintained by the Highway Maintenance Division. However, there are some systems that are owned by the electric utilities that cover the area. RIDOT pays the utility for this lighting service on a monthly basis.

An inventory of highway lighting systems of state highways was prepared in May 2000. This inventory was used to develop this *Highway Lighting Management System Plan*. Needs and projects necessary to upgrade highway lighting on state highways are presented in this Plan.

Highway Lighting Inventory

An inventory of highway lighting systems on state highways was prepared in May 2000. The location of highway lighting was presented, along with compilations of major components. Selected statewide inventory data is shown below:

Selected Lighting Inventory Data

<u>Component</u>	<u>Number</u>
Poles	5904
Holes & Boxes	5846
Lights	6894
Pedestals & Vaults	117

A general condition was also provided for each lighting system. This inventory indicated that highway lighting is in poor condition in many areas. Many systems are 20 to 30 years old and nearing the end of their useful life. There are frequent outages and excessive maintenance efforts are now required to keep many systems operational. Also, new technology, such as full-cutoff luminaires, has not been considered in Rhode Island.

The following figure shows the highways with lighting. Approximately 92 miles of state highway are lit. In most cases these highways are multi-lane, divided and include ramps which are lit. The lane miles of lit highways is significantly higher. There are nearly 6900 lights, on about 5900 poles. Tables describing highways with lighting and a summary of lighting components are presented in the appendix of this report. Detailed information on each system can be found in the *Highway Lighting System Inventory* (RI Department of Transportation, May 2000).

Rhode Island Department of Transportation
Highway Lighting Inventory
Statewide



Goal and Policies

Maintain highway lighting systems that provide for safe driving on State Highways with minimal environmental impacts.

This goal is fairly straightforward. However, meeting this goal is not so simple. The highway environment is hostile. Weather extremes; heat, cold, rain, snow and wind are tough on equipment. Add to this, the application of a corrosive, salt, and we have created a recipe for failure. Motorists also damage lighting equipment when they leave the paved roadway.

Lighting equipment is not designed to withstand the highway environment. On the contrary, it is designed to be forgiving, to give way when hit by motorists. This lessens injury to motorists and damage to vehicles, at the expense of lighting equipment. The goal then is to maintain equipment that is designed to easily fail.

Many lighting systems were built 20 to 35 years ago and are now failing. Reduced maintenance funding and staff levels during the 1980's and 1990's resulted in little attention to lighting systems. While this can be seen as the cause of current failures, it is probably equally true that many systems have lasted through their design life. These systems have reached the point where normal maintenance can no longer prevent failures and major upgrades or replacement is now required. It is also true that newer systems have not been appropriately maintained. These systems will fail, as the older systems have done, if maintenance activity is not increased.

Highway lighting equipment has remained fairly constant over the past 35 years. The last major change was in 1987, when FHWA funded the change from mercury vapor to sodium lamps. Recently new technology is being introduced. For example, full-cutoff luminaires are suggested to reduce glare. This is important for older drivers, whose eyes cannot adapt as quickly to changing lighting conditions. Excessive lighting can be a safety hazard. This new technology also reduces light pollution to surrounding areas and energy consumption. Other opportunities are expected from new technology.

The following policies and implementation actions are required:

- **Increase maintenance effort and staff allocated to highway lighting.**
- **Replace or substantially upgrade deteriorated highway lighting systems.**
- **Replace damaged and deteriorated equipment in highway lighting systems that do not need replacement.**
- **Upgrade highway lighting systems with new technology.**
- **Utilize energy efficient equipment.**
- **Increase federal and state funding devoted to highway lighting.**

The State Planning Council adopted the *Transportation 2020 – Ground Transportation Plan* on November 12, 1998, as part of the *State Guide Plan*. This Plan sets state policy for the transportation system. State agencies are to follow the goals, policies and recommendations of this Plan.

This Plan considers the needs of Rhode Island's aging population and the problems caused by glare from highway lighting. As we age, our eyes are not able to adjust to changing light levels as quickly as when we are young. The Plan also recognizes the impact of light pollution on surrounding areas.

The Plan makes the following recommendations to *Improve Lighting on Selected Roads*:

- *Improve lighting to increase safety on high-volume roads and interchanges.*
- *Consider improvements required by Rhode Island's aging population.*
- *Consider the environmental and aesthetic consequences.*
- *When replacing, repairing, or erecting new lighting on state highways, use fixtures that reduce roadway glare.*

This Highway Lighting Management System Plan is consistent with the State Guide Plan.

Recommended Projects



Highway Reconstruction Projects

When highways undergo major reconstruction, one of the elements addressed is highway lighting. As part of most major projects, highway lighting is replaced or substantially upgraded. This is appropriate as lighting upgrades many times result in cutting pavement for the burial of conduit and impact traffic during construction. There is also a cost savings by performing work as part of a larger project. Performing lighting work during highway reconstruction minimizes these impacts.

It is anticipated that lighting will be upgraded over the next five years as part of the following projects:

- I-195 from Washington Bridge to Mass. State Line
- I-195 Relocation from Washington Bridge to I-95
- I-195 Washington Bridge #200
- I-295 from I-95 to Mass State Line
- US-1 @ RI-403
- US-1 @ RI-138
- RI-6 from RI-10 to I-295
- RI-10 from I-95 to US-6
- RI-116 @ RI-146 (Northeast Quadrant)

Major lighting improvements on these highway segments will be deferred until reconstruction. However, if reconstruction projects are delayed, it may be necessary upgrade lighting separately.

Breakaway Replacement

Highway lighting is damaged in the highway environment by motor vehicle accidents. Over the years, storms and winds also damage lighting. Highway lighting is not designed to withstand hits by motorists. On the contrary, it is designed to be forgiving, to give way when hit by motorists. This is accomplished by installing *breakaways* between the pole and the concrete base. The breakaway gives way when there is an impact to the pole. Injury to the motorist and damage to the vehicle and poles is minimized.



Recently some poles seem to be falling without being hit by motorists. There is a concern that the breakaway connections have been weakened on some poles due to stress or galvanic action. This presents not only a maintenance problem, but also a safety concern. If a pole falls into the roadway it becomes a traffic hazard.

The RI Department of Transportation, Research and Technology Section has been asked to investigate this problem. Brown University and the University of Rhode Island are being engaged to research this issue. While the results of this research will not be available for some time, one possibility is that breakaways have reached their useful life. If this is the case, older breakaways will need to be replaced. This research may also determine that another type of breakaway should be used.

Pending the completion of the research project, these breakaways should be replaced before poles fall and the entire light must be replaced. The following table shows the lighting systems that could need attention. There are potentially about 4900 poles that may need breakaway attention. Since each pole has four breakaways, about 19,600 breakaways could need replacement. A set of four breakaways, enough for one pole, costs about \$175. A replacement program for all 4900 poles would cost about \$860 thousand. This estimate does not include labor.

There are several highway reconstruction projects (previously detailed) that will replace highway lighting. If it is determined that breakaways on these highways are not in critical condition, replacement will be performed as part of the reconstruction project. This will reduce this project to about 3000 poles.

This project will allow breakaway replacement. Breakaways will be replaced on the oldest systems first, unless the research effort indicates another approach is advisable. It is anticipated that this project will be carried out over a five-year period. Federal funds will be used to fund breakaway replacement. It is anticipated that RIDOT staff will replace breakaways as part of their normal duties. However, if the research project highlights urgency for replacement, contractors may be engaged to speed replacement.



State Highway Lighting					
<i>Breakaways Needing Replacement (Preliminary)</i>					
Highway	Segment	Municipalities	Miles	# Poles	Cost
I-95	Exits 1, 2, 3 & 4	Hopkinton, Richmond	2	172	\$30,100
I-95	Weigh Station to Exit 9	Richmond, W. Greenwich, E. Greenwich, W. Warwick, Warwick	4.6	340	\$59,500
I-95	Exit 10 to Milford St	Warwick, Cranston	8.6	393	\$68,775
I-95	Milford St to Mass. State Line	Cranston, Providence, Pawtucket	9.8	590	\$103,250
I-195	I-95 to Gano St	Providence	1.3	212	\$37,100
I-195	Gano St to Mass. State Line	Providence, East Providence	2.9	196	\$34,300
I-295	I-95 to Mass. State Line	Warwick, Cranston, Johnston, Smithfield, Lincoln, Cumberland	6	615	\$107,625
US-1	RI-5 to RI-113	Warwick	0.9	62	\$10,850
US-1 @ RI-138	Intersection	S. Kingstown	0.3	6	\$1,050
US-1 @ RI-403	Intersection	N. Kingstown	0.6	13	\$2,275
US-1 @ Wakefield Cutoff	Interchange	S. Kingstown	1.4	25	\$4,375
US-1	Airport Rd to Girard Ave	Warwick	0.7		
US-6	Weigh Stations	Scituate	0.3		
RI-2 @ RI-5	Meshanticut Interchange	Cranston, Warwick	1.3	177	\$30,975
RI-4	RI-102 to RI-403	East Greenwich, N. Kingstown	2.2	214	\$37,450
RI-6	Westminster St to Dean St	Providence	1.3	58	\$10,150
RI-6	RI-5 to RI-10	Johnston, Providence	3.3	270	\$47,250
RI-10	Reservoir Ave to Westminster St	Cranston, Providence	2.5	185	\$32,375
RI-10	Park Ave to Reservoir Ave	Cranston	1.3	64	\$11,200
RI-24	RI-114 to Fish Rd	Portsmouth, Tiverton	5.9	180	\$31,500
RI-37	US-1 to I-295	Warwick, Cranston	3.1	180	\$31,500
RI-78	US-1 to Conn. State Line	Westerly	4.2	109	\$19,075
RI-99	RI-146 to Mendon Rd	Lincoln, Cumberland, Woonsocket	2.9	71	\$12,425
RI-113	RI-5 to I-295	Warwick	0.9	18	\$3,150
RI-114/East Shore Expwy	Federal Rd to I-195	Barrington, E. Providence	2.9	147	\$25,725
RI-138	US-1 to East Shore Rd	N. Kingstown, Jamestown	5.3	160	\$28,000
RI-146	I-95 to RI-5/RI-102	Providence, N. Providence, Lincoln, N. Smithfield	11.6	335	\$58,625
Coronado Rd	Jefferson Blvd to US-1	Warwick	0.3	9	\$1,575
Henderson Bridge	Bridge and approaches	E. Providence, Providence	1.1	52	\$9,100
Hussey Bridge	US-1A	North Kingstown	0.1		
World War Memorial Bridge	Chapel St	Burrillville	0.1		
Barrington River Temporary Br	RI-114	Barrington	0.2		
Palmer River Temporary Br	RI-114	Barrington, Warren	0.1		
Park & Ride Lots	Statewide	Barrington, E. Greenwich, E. Providence, Hopkinton, Pawtucket, Richmond, Tiverton, Warren, Warwick	2	57	\$9,975
Total	-	Statewide	92	4910	\$859,250
<i>Note: Cost is for materials only, labor is not included.</i>					

Full-Cutoff Retrofit

The *State Guide Plan* (Transportation 2020: Ground Transportation Plan) recognizes that the age structure of Rhode Island's population is changing. The 65-and-over age group will rise sharply by 2020, to a level 28 percent higher than in 1990. As people age, visual performance becomes progressively poorer. The older motorist requires a more distinct target to see. Glare makes it difficult or impossible to distinguish objects, until re-adaptation to the prevailing light level.

New technology is available to address the need of older drivers. Full-cutoff fixtures are now available for highway use. These fixtures direct light onto the roadway, rather than lighting the area. Glare is reduced increasing safety. Full-cutoff fixtures are also more energy efficient, resulting in reduced operating costs. These fixtures reduce light pollution, producing a more aesthetic and pleasing environment.



This project will replace existing lights on state highways with full-cutoff fixtures. There are about 6600 fixtures that potentially could be replaced by full-cutoff fixtures. About 1000 should be replaced by proposed highway reconstruction projects. This leaves about 5600 fixtures to be considered by this project.

In many cases it will be possible to simply replace the existing fixture. However, in some cases existing pole spacing may require that additional poles be added or that 40-foot poles replace 30-foot poles. It is anticipated that a lighting consultant will be engaged to review existing lighting systems to determine where modifications will be required. This effort should cost about \$75,000.

Full-cutoff replacement fixtures cost about \$200 each. If all 5600 fixtures are replaced, about \$1.12 million will be required. RIDOT will attempt to complete this project within five years. Those areas that do not require modifications will be considered first for replacement. Federal-aid funds will be requested for replacement of these fixtures. It is anticipated that RIDOT staff will replace fixtures as part of their regular duties. If RIDOT staff does not have time to undertake this effort, contractors will be hired. Federal-aid funds will be used for contractor efforts.

Damaged Highway Lighting Replacement

Lighting equipment is not designed to withstand the highway environment. On the contrary, it is designed to be forgiving, to give way when hit by motorists. This lessens injury to motorists and damage to vehicles, at the expense of lighting equipment. It is difficult to keep equipment that is designed to easily fail in working order. It must be recognized that a pole knocked down by a motorist has performed as designed. It has served its intended purpose and lasted its useful life.



Federal-aid funds were used to replace damaged highway lighting through 1998. RIDOT will request federal-aid funds to continue this program. This program will address two problem areas: lighting that is currently damaged and lighting that becomes damaged in the future.

The first project will replace all highway lighting currently damaged. This will include lights, poles, concrete bases, conduit and wiring on lighting systems maintained by RIDOT. On lighting systems maintained by utilities, RIDOT is only responsible for concrete bases, conduit to the pole base and breakaways. There are about 300 poles needing replacement. About 100 are located on highways scheduled for reconstruction, leaving 200 that need replacement now. About half of these need base work, as RIDOT attempts to replace poles on good bases in a timely manner. Because of staff limitations it is doubtful RIDOT will be able to complete this work. It is anticipated that a contractor will be engaged to replace this backlog. Contractor costs are estimated at about \$7,000 per pole and base replacement and about \$2,000 to just replace the pole and fixture. The estimated project cost is \$900 thousand. If scheduled highway reconstruction projects are delayed, it will be necessary to replace additional poles.

Along with completion of backlog replacements, a program to replace damaged lighting as soon as reported will be initiated. RIDOT staff will attempt to perform this work, without contractor assistance. RIDOT plans to seek federal funds for this replacement program. The annual cost will be about \$100 thousand. It is anticipated that RIDOT will use equipment in inventory to make repairs and will replenish the inventory once or twice per year. Funds may also be sought for specialized installation equipment.



Service Pedestal Upgrades

A *Service Pedestal* is the place where electrical service from a utility company meets the highway lighting system. The pedestal normally consists of a concrete pad with a metal cabinet. The controls for the system are located within the cabinet. The cabinet also keeps the connections between the utility and the lighting system out of the weather. In some cases a larger structure has been used in the past. These *vaults* are really small concrete and brick buildings.

RIDOT has 102 service pedestals and 15 vaults, for a total 117. In the past, steel cabinets better suited to indoor applications, have been used. The highway environment has been hard on these steel cabinets and they deteriorate quickly. Normally, the first sign of damage occurs at the door hinges. Hinges rust and doors fall off when opened. Doors must then be banded in place, making access difficult. Cabinets also rust at the concrete pad fairly quickly. Most vaults date back 20 years and are in poor condition.



Because of the condition of cabinets and vaults, weather and moisture gets to the electrical control equipment inside. This causes corrosion of equipment and lighting outages. RIDOT has recognized that steel cabinets and vaults need to be replaced with another option. Aluminum cabinets have been specified in some recent applications. More recently stainless steel has been used.

RIDOT is currently in the process of replacing five pedestals along I-95 in Providence and Pawtucket with stainless steel cabinets (6'H x 5'L x 2'D). This cabinet is also slightly larger than most cabinets previously used. This will allow easier access to equipment by Maintenance personnel. This project is being funded with state funds. This project should be complete in Fall 2000. Based upon this project, RIDOT plans to proceed with replacement of other steel cabinets and vaults.

Of the 117 steel cabinets and vaults, recent replacements include two with aluminum and two with stainless steel cabinets. Six cabinets are currently being replaced with stainless steel. This leaves 101 that need replacement. About 20 will be replaced over the next five years as part of highway reconstruction projects. This leaves 81 needing replacement actions.

There are also some systems that do not have pedestals they are wired directly to utility systems. RIDOT pays a flat rate for these systems, as they are not metered. The utilities maintain these systems. In many cases, the utilities do not maintain these systems very well. Without meters, RIDOT pays even if some lights are out. RIDOT plans to install service pedestals at these locations, to meter service and to take over maintenance of these systems. This will result in the need for about 20 new pedestals.

This project will allow for new and upgraded pedestals and replacement of vaults with pedestals. About 100 new or upgraded pedestals will be required. A new pedestal will cost about 20 thousand. Upgrades where the concrete pad need not be replaced will cost about \$10 thousand. At an average cost of \$15 thousand, \$1.5 million will be required. It is anticipated that this project will be undertaken over five years. Cabinets in the worse condition and systems without cabinets will be addressed first.

System Improvements

Some sections of highway lighting have been in place since the 1960's. Systems older than about twenty years have out lived their useful life. Many of the older systems need upgrading. This project will upgrade these systems. In addition, utility companies, not RIDOT, maintain some systems. Many times utility companies are not responsive to repair needs. However, RIDOT still must pay for operation of lights since the systems are not metered. This project will meter systems, so that RIDOT will only pay for electricity used. RIDOT may also take over maintenance after upgrade.

Many of the systems in poor condition are located along highways that are also in poor condition. These highways are scheduled for reconstruction and highway lighting will be upgraded as part of this reconstruction. There are other lighting systems located along highways that are not scheduled for work. This project will address these systems. The following systems will be considered:

- I-95 from RI-10 to Bridge 550 (Providence & Pawtucket)
(Except Civic Center Interchange & I-95 Relocation project area)
- I-95, Exits 1,2,3 & 4 (Hopkinton & Richmond)
- RI-37 from Railroad Line to Pontiac Ave. (Cranston & Warwick)
- RI-78 from US-1 to Conn. State Line (Westerly)
- US-1 By-pass from RI-5 to RI-113 (Warwick)
- RI-2 @RI-5, Meshanticut Interchange (Cranston, Warwick)
- RI-113 from RI-5 to I-295 (Warwick)
- Henderson Bridge (East Providence & Providence)

These projects are listed in priority order. However, since all are critical, this order may not be strictly followed, if it is possible to advance a lower priority faster.



It is anticipated that the following steps will be followed for each project:

1. Replace Electrical Service Pedestals.
2. Clean and inspect hand holes, inspect conduits.
3. Determine if spacing allows full cut-off fixtures
4. Replace hand holes, conduit and pole bases as required.
5. Replace wiring.
6. Replace poles and upgrade lights using full cut-off fixtures.

Several of these steps may be performed together. Contractors, using federal-aid funds, will perform this work. The costs of these improvements will not be known until initial steps determine the extent of replacement required. At this time, it is anticipated that about \$500 thousand will be required each year. This estimate may be low.

High Mast Lighting Replacement

High mast lighting is used to light entire areas of a roadway. Very strong lights may be located on a single pole a hundred or more feet high. A very large area is lit. Usually light extends to surrounding areas, resulting in light pollution. This lighting is energy inefficient, as powerful lighting must be used, since it is located so high above the roadway. Also, this type of lighting does not work well when fog or rain lower the ceiling. The initial cost of high mast lighting may be less than traditional lighting, but the operational costs are higher.



RIDOT has used high mast lighting in several locations:

- I-95, Exit 7 (West Greenwich)
- I-95, Truck Weigh Area (Richmond)
- I-95, Civic Center Interchange (Providence)
- I-295, Exits 5 & 6 (Johnston)

As part of the I-295 reconstruction project, a lighting design consultant has found serious corrosion and scaling at the base of high mast poles. This investigation also found that bolts holding poles to the concrete base appear to have stretched, allowing poles to sway during high winds. Maintenance staff also experiences difficulty lowering lighting for service due to twisting of the poles. Lowering mechanisms no longer line up with access holes. The condition of these poles is considered serious. It appears it will be necessary to replace high mast lighting.

The RIDOT, Research and Technology Section has been asked to investigate this problem. Brown University and the University of Rhode Island are being engaged to research this issue. This research will review the condition of all high mast lighting in Rhode Island. While the results of this research will not be available for some time, one possibility is that some high mast lighting systems have reached their useful life. If this is the case, older systems will need to be replaced very soon. This research may also indicate the useful life remaining in newer systems, such as the I-95 Civic Center Interchange.

The urgency of replacing this lighting will not be known until the research project is complete. It is anticipated that the I-295 systems will be replaced as part of the I-295 reconstruction project within the next five years. A program to replace other systems will be prepared when research results are available.



Recommended Program



Recommended Program

Project	Federal Fiscal Year (thousand dollars)						Total
	2001	2002	2003	2004	2005	2006	
Highway Reconstruction	Funded as part of reconstruction projects						
Breakaway Replacement	172	172	172	172	172		860
Full-Cutoff Retrofit	224	224	224	224	224		1120
Damaged Highway Lighting Replacement	550	550	100	100	100	100	1500
Service Pedestal Upgrades	300	300	300	300	300		1500
System Improvements	500	500	500	500	500	500	3000
High Mast Lighting Replacement	To be determined						
Total	1746	1746	1296	1296	1296	600	7980

*RIDOT / Operations
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Appendix



State Highways with Highway Lighting

Highway	Segment	Municipalities	Miles
I-95	Exits 1, 2, 3 & 4	Hopkinton, Richmond	2.0
I-95	Weigh Station to Exit 9	Richmond, W. Greenwich, E. Greenwich, W. Warwick, Warwick	4.6
I-95	Exit 10 to Milford St	Warwick, Cranston	8.6
I-95	Milford St to Mass. State Line	Cranston, Providence, Pawtucket	9.8
I-195	I-95 to Gano St	Providence	1.3
I-195	Gano St to Mass. State Line	Providence, East Providence	2.9
I-295	I-95 to Mass. State Line	Warwick, Cranston, Johnston, Smithfield, Lincoln, Cumberland	6.0
US-1 By-pass	RI-5 to RI-113	Warwick	0.9
US-1 @ RI-138	Intersection	S. Kingstown	0.3
US-1 @ RI-403	Intersection	N. Kingstown	0.6
US-1 @ Wakefield	Cutoff	Interchange	S. Kingstown 1.4
US-1	Airport Rd to Girard Ave	Warwick	0.7
US-6 By-pass	Weigh Stations	Scituate	0.3
RI-2 @ RI-5	Meshanticut Interchange	Cranston, Warwick	1.3
RI-4	RI-102 to RI-403	East Greenwich, N. Kingstown	2.2
RI-6	Westminster St to Dean St	Providence	1.3
RI-6	RI-5 to RI-10	Johnston, Providence	3.3
RI-10	Reservoir Ave to Westminster St	Cranston, Providence	2.5
RI-10	Park Ave to Reservoir Ave	Cranston	1.3
RI-24	RI-114 to Fish Rd	Portsmouth, Tiverton	5.9
RI-37	US-1 to I-295	Warwick, Cranston	3.1
RI-78	US-1 to Conn. State Line	Westerly	4.2
RI-99	RI-146 to Mendon Rd	Lincoln, Cumberland, Woonsocket	2.9
RI-113	RI-5 to I-295	Warwick	0.9
RI-114/East Shore Expwy		Federal Rd to I-195	Barrington, E. Providence
2.9			
RI-138	US-1 to the Newport Bridge	N. Kingstown, Jamestown	5.3
RI-146	I-95 to RI-5/RI-102	Providence, N. Providence, Lincoln, N. Smithfield	11.6
Coronado Bridge	Jefferson Blvd to US-1	Warwick	0.3
Henderson Bridge	Bridge and approaches	E. Providence, Providence	1.1
Hussey Bridge	US-1A	North Kingstown	0.1
World War Memorial Bridge		Chapel St	Burrillville 0.1
Barrington River Temporary Br		RI-114	Barrington 0.2
Palmer River Temporary Br		RI-114	Barrington, Warren 0.1
Park & Ride Lots	Statewide	Barrington, E. Greenwich, E. Providence, Hopkinton, Pawtucket, Richmond,	
Tiverton, Warren, Warwick		2.0	
Total	-	Statewide	92.0

RIDOT / Operations

May 2000

Highway Lighting Inventory

Statewide Totals

Rhode Island

Componet	Number
30' Single Pole w/Single Davit Arm	4583
30' Single Pole w/Double Davit Arm	310
40' Single Pole w/Single Davit Arm	406
40' Single pole w/Double Davit Arm	487
Decorative Poles	73
High Mast Poles	45
Precast Type "A" Hand Hole	4829
Heavy-Duty Precast Hand Hole	726
Precast Type "B" Pull Box	94
Bridge Deck Junction Box	197
100-Watt Metal Halide Lamps	4
100-Watt Wall Type High Pressure Sodium Lamps	10
150-Watt High Pressure Sodium Lamps	90
250-Watt High Pressure Sodium Lamps	4212
400-Watt High Pressure Sodium Lamps	1863
400-Watt Wall Type High Pressure Sodium Lamps	43
400-Watt Mercury Vapor Lamps	458
1000-Watt High Pressure Sodium Lamps	45
1000-Watt Metal Halide Lamps	169
1000-Watt Mercury Vapor Lamps	0
Service Pedestals	102
Electrical Service Vaults	15

Length: 92.0 miles

***RIDOT / Operations
May, 2000***